BRUHATH BENGALURU MAHANAGARA PALIKE

QUALITY CONTROL TEST REPORT

Name of Work: Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Civil Aim Consultants & Engineers

(Buildings Geo-Test & Highway Materials Testing Laboratory)

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No.01, Satvika Nilaya,Opp.Widia Poorna Prajna School,Ramaiah Layout Nagasandra Bengaluru -560073.

QC ABSTRACT

Nameof Work: Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

SI. No.	Item	Quantity As Per BOQ	Required No's of testes	Actual No's of testes	Testes	Frequency
1	1:4:8	65.18 Cum	1	1	Cement	One Test Per Lot
					Sand, Aggregates	
2	M20	14.26 Cum	2	2	Concrete Cube Compressive Strength	-
3	Steel	1.35 Tonne	1	1	-	-
4	Slab (250mm)	44.10 Sqm	1	1	Concrete Core Compressive Strength	-
5	Slab (100mm)	113.40 Sqm	1	1	Concrete Core Compressive Strength	-
6	WMM	40.25 Cum	-	-	-	-
		Gradation	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Atterberg Limits	1	1	-	-
7	DBM	20.30 Cum	-	-	-	-
		Quality of Binder	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Gradation	1	1	-	-
		Stability of Mix	1	1	-	-
		Specific Gravity	1	1	-	-
		Bitumen content	1	1	-	-

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8	BC	46.20 Cum	-	-	-	-
		Quality of Binder	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Gradation	1	1	-	-
		Specific Gravity	1	1	-	-
		Stability of Mix	1	1	-	-
		Bitumen content	1	1	-	-

Cubes

0-5 Cum	1Set
6-15 Cum	2Set
16-30 Cum	3Set
31-50 Cum	4Set

Add 1set for extra 50Cum

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 07.04.2021

TEST REPORT

CLIENT	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
NAME OF THE WORK	:	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
SAMPLE ID	:	Cement (Dalmia OPC 53 Grade)
DATE OF MANUFACTURE		March - 2021
DATE OF TESTING		05.04.2021 to 07.04.2021
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 269-2015
1	a) Initial Setting Time	IS-4031 (Part 5)	140 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part 5)	320 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Fineness (by dry Sieving on IS 90 micron Sieve)	IS-4031 (Part 1)	2.40m	Shall not be more than 10mm
3	Standard Consistency	IS-4031 (Part -4)	29.00 %	-

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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⇒ Any Query regarding the report must be reported within 30days from the date of testing.

⇒ The Results of the Materials tested meets the Standards and hence can be used for the work.

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No.01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
Ramaiah layout, Nagasandra, Bangalore - 560 073.
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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 07.04.2021

TEST REPORT ON FINE AGGREGATES (SAND)

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP,

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Date of Testing : 07.04.2021

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : Sand Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II	Remarks
10	0	0	0	100	100	
4.75	74	7.40	7.40	92.6	90-100	
2.36	138	13.80	21.20	78.8	75-100	The Sample Confirms to Grading Zone-II
1.18	182	18.20	39.40	60.6	55-90	
600 Micron	155	15.50	54.90	45.1	35-59	
300 Micron	229	22.90	77.80	22.2	8-30	
150 Micron	168	16.80	94.60	5.4	0-10	

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For CIVIL AIM CONSULTANTS & ENGINEERS

Prajwal

Authorised Signatory

AE WIO

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

No.01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 07.04.2021

TEST REPORT ON COARSE AGGREGATES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Date of Testing : 07.04.2021

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : 20mm Aggregates

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
40	0	0	0	100	100
20	182	3.6	3.6	96.4	95-100
10	2465	49.3	52.9	47.1	25-55
4.75	1958	39.2	92.1	7.9	0-10

Assistant Executive Engineer Vidyaranyapura Sub Division Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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TEST REPORT ON COARSE AGGREGATES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Date of Testing : 07.04.2021

IS Code : IS 383:2016

: IS 2386 (Part 1):1963(RA 2011)

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **15000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	189	1.26	1.26	98.74	95-100
20	8326	55.51	56.77	43.23	30-70
10	3256	21.71	78.47	21.53	10-35
4.75	2860	19.07	97.54	2.46	0-5

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Authorised Signatory

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Job No.: CACE/BBMP/LG/W.No.33/2020-21 Date : 07.04.2021

TEST REPORT ON FINE AGGREGATES (SAND)
IS 2116-1980

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Date of Testing : 07.04.2021

Material : Sand - Masonry Total wt. of aggregates in gms = **1000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 2116-1980
4.75	0	0.00	0.00	100.0	100
2.36	12	1.20	1.20	98.8	90-100
1.18	38	3.80	5.00	95.0	70-100
600 Micron	89	8.90	13.90	86.1	40-100
300 Micron	255	25.50	39.40	60.6	5-70
150 Micron	482	48.20	87.60	12.4	0-15

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 09.04.2021

TEST REPORT COARSE AGGREGATES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample Type/Size: : 20mm Aggregates

Date of test: : 07.04.2021 to 09.04.2021

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as Per IS. Specification IS383-1970 (Reaffirmed 2002)
1	Crushing Value (%)	26.54%	Max 45%
2	Specific Gravity	2.68%	–
3	Water Absorption	0.42%	–
4	Combined Flakiness & Elongation Index	25.12%	–

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For CIVIL AIM CONSULTANTS & ENGINEERS

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TEST REPORT FINE AGGREGATES (SAND)

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample Type/Size: : Sand

Date of test: : 07.04.2021 to 09.04.2021

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as Per IS. Specification IS383-1970 (Reaffirmed 2002)
1	Specific Gravity	2.65%	–
2	Silt Content	0.62%	Not More than 8%
2	Bulking of Sand	18.58%	–

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Assistant Executive Engineer Vidyaranyapura sub Division BBMP, Bangalore - 97

For CIVIL AIM CONSULTANTS & ENGINEERS

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Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample Type/Size: : 40mm Aggregates

Date of test: : 07.04.2021 to 09.04.2021

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as Per IS. Specification IS383-1970 (Reaffirmed 2002)
1	Crushing Value (%)	26.89%	Max 45%
2	Specific Gravity	2.67%	–
3	Water Absorption	0.48%	–
4	Combined Flakiness & Elongation Index	24.89%	–

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP Bangalore

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Job N CACE/BBMP/CE/W.No.10/2021-22 Date : 09.04.2021

TEST REPORT OF PHYSICAL PROPERTIES OF REINFORCEMENT STEEL

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Steel Dia/Length : 8,10mm,12mm " Fe500 TMT Bars

Reference to BIS codes : IS 1786:2008(RA 2013) High Strength Deformed Steel Bars and Wires for Concrete Reinforcement-Specification

: IS 1608:2005 Metallic Materials- Tensile Testing at Ambient Temperature

Date of test : 09.04.2021

		For 8mm		For 10mm		For 12mm	
S.No	Details	Test Reaults	Min Req. as per IS 1786-2008	Test Reaults	Min Req. as per IS 1786-2008	Test Results	Min Req. as per IS 1786-2008
1	Observed diameter of bar	8.00mm	8.00mm	10.00mm	10.00mm	12.0mm	12.0mm
2	Observed Wt/m Lemgth Kg/m	0.399	0.363	0.620	0.567	0.892	0.834
3	Proof Stress / Yield Stress, fy, N/mm^2	536	500.0	548	500.0	562.0	500.0
4	Bend / Re bend Test	Ok	-	Ok	-	Ok	-
5	Percentage of Elongation, %	15.00	12.00	16.50	12.00	17.00	12.00
6	Ultimate Tensile strength N/mm2	615	545	620	545	638	545

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 23.04.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client	: **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	: **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the work	: Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	16.04.2021	23.04.2021	8.162	336.3	14.95	
2	16.04.2021	23.04.2021	8.138	349.5	15.53	15.39
3	16.04.2021	23.04.2021	8.146	352.8	15.68	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 14.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as or : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	16.04.2021	14.05.2021	8.184	505.2	22.45	
2	16.04.2021	14.05.2021	8.169	516.8	22.97	22.38
3	16.04.2021	14.05.2021	8.152	488.9	21.73	

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For CIVIL AIM CONSULTANTS & ENGINEERS

Sunitha.NK
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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 23.04.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	16.04.2021	23.04.2021	8.162	342.3	15.21	
2	16.04.2021	23.04.2021	8.138	339.6	15.09	15.32
3	16.04.2021	23.04.2021	8.152	352.4	15.66	

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4. The Results of the Materials tested meets the Standards and hence can be used for the work.

Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore - 97

Sunitha.N.K
AE N10

For CIVIL AIM CONSULTANTS & ENGINEERS

Prajwal

Authorised Signatory

No.01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
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CIVIL AIM CONSULTANTS & ENGINEERS

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NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 14.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{20}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	16.04.2021	14.05.2021	8.169	505.2	22.45	
2	16.04.2021	14.05.2021	8.174	484.9	21.55	22.02
3	16.04.2021	14.05.2021	8.152	496.3	22.06	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore - 97

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4. The Results of the Materials tested meets the Standards and hence can be used for the work.

For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 28.04.2021

PRECAST SLAB 100mm Thick(CORE) TEST REPORT

Client	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Contractor	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor,
Name of Work	:	Improvements to roads and xdrains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
No.of Sample Tested	:	03
Date of Testing	:	28.04.2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{15}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	82.00	0.378	2347.73	1.64	0.961	24.60	12.53	13.53	13.00	16.26
2	50.00	84.00	0.392	2376.71	1.68	0.965	25.90	13.19	14.25	13.75	17.19
3	50.00	86.00	0.405	2398.43	1.72	0.970	26.20	13.34	14.41	13.98	17.47

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Authorised Signatory

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 28.04.2021

PRECAST SLAB 250mm Thick(CORE) TEST REPORT

Client	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Contractor	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor,
Name of Work	:	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
No.of Sample Tested	:	03
Date of Testing	:	28.04.2021
Techinical Reference	:	IS:516-1959 (Reaffirmed 1999), SP-24:1983.
Grade of Concrete	:	M_{15}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	90.00	122.00	1.821	2346.26	1.36	0.930	84.50	13.28	14.35	13.35	16.68
2	90.00	124.00	1.862	2360.39	1.38	0.933	85.60	13.46	14.53	13.56	16.94
3	90.00	126.00	1.915	2389.04	1.40	0.935	85.90	13.50	14.58	13.64	17.05

Assistant Executive Engineer Vidyaranyapura Sub Div. BBMP, Bangalore-91

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 05.05.2021

GRADATION FOR WMM

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 05.05.2021

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	204	204	2.0	98.0	95-100
22.4	2554	2758	27.6	72.4	60-80
11.2	2158	4916	49.2	50.8	40-60
4.75	1897	6813	68.1	31.9	25-40
2.36	1154	7967	79.7	20.3	15-30
0.600	582	8549	85.5	14.5	8-22
0.075	1215	9764	97.6	2.4	0-5

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore - 97

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For CIVIL AIM CONSULTANTS & ENGINEERS

Prajwal

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 05.05.2021

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	05.05.2021

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	298	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.08	22.60	22.34

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore - 97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 05.05.2021

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	05.05.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	11.8	12.5	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	12.9	13.3	
	Combined Flakiness & Elongation index	24.70	25.80	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore - 97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 07.05.2021

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of Work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

IS Code: IS 2720(Part 5):1985

Date of Testing : 05.05.2021 to 07.05.2021

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	22.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP Bangalore - 97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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AE WID

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 20.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	20.05.2021	8.169	505.2	22.45	
2	13.05.2021	20.05.2021	8.175	516.3	22.95	22.38
3	13.05.2021	20.05.2021	8.156	488.9	21.73	

Assistant Executive Engineer (Vidyaranyapura Sub Division) BBMP, Bangalore-91

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Sweetha. N.L
AE L1 O

For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/UN/W.No.05/2021-22

Date: 10.06.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	10.06.2021	8.195	715.2	31.79	32.26
2	13.05.2021	10.06.2021	8.152	726.3	32.28	
3	13.05.2021	10.06.2021	8.178	735.9	32.71	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 20.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	20.05.2021	8.184	482.2	21.43	22.35
2	13.05.2021	20.05.2021	8.169	509.3	22.64	
3	13.05.2021	20.05.2021	8.155	516.8	22.97	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-91

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 10.06.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	10.06.2021	8.168	715.2	31.79	
2	13.05.2021	10.06.2021	8.172	726.3	32.28	32.26
3	13.05.2021	10.06.2021	8.159	735.8	32.70	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 20.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	20.05.2021	8.188	495.6	22.03	
2	13.05.2021	20.05.2021	8.194	505.2	22.45	22.48
3	13.05.2021	20.05.2021	8.168	516.8	22.97	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 10.06.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	10.06.2021	8.189	705.2	31.34	
2	13.05.2021	10.06.2021	8.165	716.8	31.86	31.83
3	13.05.2021	10.06.2021	8.149	726.4	32.28	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Authorised Signatory

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 20.05.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weighr of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	20.05.2021	8.195	505.2	22.45	
2	13.05.2021	20.05.2021	8.162	526.3	23.39	22.96
3	13.05.2021	20.05.2021	8.149	518.2	23.03	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore

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Job No.: CACE/BBMP/UN/W.No.05/2021-22 Date: 10.06.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	10.06.2021	8.145	715.2	31.79	
2	13.05.2021	10.06.2021	8.136	708.6	31.49	31.75
3	13.05.2021	10.06.2021	8.168	719.3	31.97	

Assistant Executive Engineer Vidyaranyapura Sub Div. BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 7th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	20.05.2021	8.188	505.2	22.45	
2	13.05.2021	20.05.2021	8.169	512.9	22.80	22.30
3	13.05.2021	20.05.2021	8.155	486.9	21.64	

Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 10.06.2021

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of the work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)	Average Value (N/mm2)
1	13.05.2021	10.06.2021	8.184	708.2	31.48	
2	13.05.2021	10.06.2021	8.166	716.5	31.84	31.84
3	13.05.2021	10.06.2021	8.192	724.8	32.21	

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore - 97

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Job No: CACE/BBMP/CE/W.No.10/2021-22 Date: 19.05.2021

TEST REPORT

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**19.05.2021**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	52	Min 45
2	Softening point, ^{0}C	50	Min. 47
3	Ductility at 27^{0}C, cm	> 100	Min. 40
4	Flash Point, ^{0}C	280	Min. 220

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 19.05.2021

Aggregate Gradation Test

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	19.05.2021

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
26.50	699	7.0	6.99	93.01	90 - 100	
19.00	1230	12.3	19.29	80.71	71 - 95	
13.20	1368	13.7	32.97	67.03	56 - 80	
4.75	2526	25.3	58.23	41.77	38 - 54	
2.36	1268	12.7	70.91	29.09	28 - 42	
0.300	1352	13.5	84.43	15.57	7 - 21	
0.075	1160	11.6	96.03	3.97	2 - 8	

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade II MORTH specification
26.5	684	6.8	6.84	93.16	90 - 100	
19	1436	14.4	21.20	78.80	71 - 95	
13.2	1160	11.6	32.80	67.20	56 - 80	
4.75	2452	24.5	57.32	42.68	38 - 54	
2.360	1159	11.6	68.91	31.09	28 - 42	
0.300	1360	13.6	82.51	17.49	7 - 21	
0.075	1128	11.3	93.79	6.21	2 - 8	

Assistant Executive Engineer, Vidyaranyapura Sub Division, BBMP, Bangalore-97

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JobNo: CACE/BBMP/CE/W.No.10/2021-22 Date : 19.05.2021

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 19.05.2021

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	380	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	295	295	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	22.37	22.77	22.57

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore

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JobNo: CACE/BBMP/CE/W.No.10/2021-22 Date : 19.05.2021

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

Client : **Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.

Agency : **M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.

Name of work : Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.

BIS Code : IS 2386 Part (1):1963

Date of Test : 19.05.2021

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.50	13.90	26.40	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.30	13.80	26.10	

Note:

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Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 21.05.2021

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor,
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	19.05.2021 to 21.05.2021

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2019	2021	2023	
2	Weight of basket suspended in water	W_2 g	754	754	754	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2017	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	750	750	750	
6	Weight of oven dried aggregate	W_4 g	2009	2010	2011	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.679	2.680	2.681	2.680
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.700	2.705	2.710	2.705
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP (CR) Zone-97

Comments:

→Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Sunitha.N.K AE D10

For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 22.05.2021

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	22.05.2021

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.84,	10.15	9 Kn (min)
2	Marshal flow, mm	2.63	3.58	2 – 4
3	Percent air voids in Mineral Aggregate	13.66	14.49	13 – 15
4	Voids in Compacted Mix	3.25	4.21	3 – 6
5	Percent Voids filled with Bitumen	68.19	69.56	65 - 75
6	Density, g/cc	2.25	2.27	--

Assistant Executive Engineer Vidyaranyapura Sub Div. BBMP, Bangalore-97

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 22.05.2021

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP,
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Date of Testing	22.05.2021

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477	477.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.00	22.50
7. Bitumen content in %	4.60	4.50
8. Average	4.55	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	32.9	32.9	6.9	93.1	90 - 100
19	70.2	103.1	21.6	78.4	71 - 95
13.2	68.6	171.7	36.0	64.0	56 - 80
4.75	83.5	255.2	53.5	46.5	38 - 54
2.360	76.9	332.1	69.6	30.4	28 - 42
0.300	92.4	424.5	89.0	11.0	7 - 21
0.075	24.7	449.2	94.2	5.8	2 - 8

SIEVE SIZE	Test 2				Requirement as per MORTH table 500.10
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
37.5	0	0	0	100	100
26.5	36.9	36.9	7.7	92.3	90 - 100
19	72.4	109.3	22.9	77.1	71 - 95
13.2	64.2	173.5	36.3	63.7	56 - 80
4.75	83.60	257.1	53.8	46.2	38 - 54
2.360	75.5	332.6	69.7	30.3	28 - 42
0.300	90.4	423	88.6	11.4	7 - 21
0.075	24.2	447.2	93.7	6.3	2 - 8

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For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 24.05.2021

TEST REPORT

Client	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	24.05.2021

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	51	Min 45
2	Softening point, ^{0}C	49	Min. 47
3	Ductility at 27^{0}C, cm	> 100	Min. 40
4	Flash Point, ^{0}C	276	Min. 220

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 24.05.2021

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	24.05.2021

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	22.05	22.45	22.25

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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For CIVIL AIM CONSULTANTS & ENGINEERS

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 24.05.2021

Aggregate Gradation Test

IS : 2386 Part I

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor,
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	24.05.2021

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	418	8.36	8.36	91.64	90 - 100	
9.5	495	9.90	18.26	81.74	70 - 88	
4.75	636	12.72	30.98	69.02	53 - 71	
2.36	682	13.64	44.62	55.38	42 - 58	
1.18	520	10.40	55.02	44.98	34 - 48	
0.600	546	10.92	65.94	34.06	26 - 38	
0.300	498	9.96	75.90	24.10	18 - 28	
0.150	336	6.72	82.62	17.38	12 - 20	
0.075	482	9.64	92.26	7.74	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	425	8.50	8.50	91.50	90 - 100	
9.5	549	10.98	19.48	80.52	70 - 88	
4.75	645	12.90	32.38	67.62	53 - 71	
2.36	533	10.66	43.04	56.96	42 - 58	
1.18	559	11.18	54.22	45.78	34 - 48	
0.600	546	10.92	65.14	34.86	26 - 38	
0.300	685	13.70	78.84	21.16	18 - 28	
0.150	198	3.96	82.80	17.20	12 - 20	
0.075	472	9.44	92.24	7.76	4 - 10	

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 24.05.2021

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	24.05.2021

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.5	12.2	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.6	14.1	
	Combined Flakiness & Elongation index	25.10	26.30	

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Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 26.05.2021

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	24.05.2021 to 26.05.2021

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2019	2021	2023	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1264	1266	1268	
4	Weight of saturated surface dry aggregate in air	W_3 g	2015	2017	2019	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	751	751	751	
6	Weight of oven dried aggregate	W_4 g	2008	2009	2010	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.674	2.675	2.676	2.675
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.699	2.704	2.709	2.704
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.35%	0.40%	0.45%	0.40%

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date: 27.05.2021

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
Agency	:	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
Name of the Work	:	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	27.05.2021

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.89	10.24	9 Kn (min)
2	Marshal flow, mm	2.56	3.45	2 – 4
3	Percent air voids in Mineral Aggregate	13.72	14.18	13 – 15
4	Voids in Compacted Mix	3.84	4.51	3 – 6
5	Percent Voids filled with Bitumen	69.48	70.22	65 - 75
6	Density, g/cc	2.25	2.26	--

Assistant Executive Engineer Vidyaranyapura Sub Division BBMP, Bangalore-97

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Job No.: CACE/BBMP/CE/W.No.10/2021-22 Date : 27.05.2021

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer,** Vidyaranyapura Sub Division, BBMP, Bangalore.
AGENCY	**M/s Sri. Channakeshawa Enterprises (Prop. Kiran Gowda D),** Contractor, Bangalore.
NAME OF THE WORK	Improvements to roads and drains at Nanjappa layout in Ward No.10 Doddabommasandra Vidyaranyapura Sub Division, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	27.05.2021

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472	473
3. Weight of Asphalt and Mineral matter Extracted, g	28	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	28	27
7. Bitumen content in %	5.60	5.40
8. Average	5.50	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14.8	14.8	3.1	96.9	90 - 100
9.5	62.8	77.6	16.4	83.6	70 - 88
4.75	96.3	173.9	36.8	63.2	53 - 71
2.36	46.8	220.7	46.8	53.2	42 - 58
1.18	32.6	253.3	53.7	46.3	34 - 48
0.600	52.8	306.1	64.9	35.1	26 - 38
0.300	40.9	347	73.5	26.5	18 - 28
0.150	35.3	382.3	81.0	19.0	12 - 20
0.075	46.8	429.1	90.9	9.1	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	12.3	12.3	2.6	97.4	90 - 100
9.5	69.2	81.5	17.2	82.8	70 - 88
4.75	92.4	173.9	36.8	63.2	53 - 71
2.36	46.5	220.4	46.6	53.4	42 - 58
1.18	42.8	263.2	55.6	44.4	34 - 48
0.600	50.6	313.8	66.3	33.7	26 - 38
0.300	43.9	357.7	75.6	24.4	18 - 28
0.150	35.3	393	83.1	16.9	12 - 20
0.075	42.8	435.8	92.1	7.9	4 - 10

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